AC Drives Selection Chart

Series 5	15H	18H	22H Regenerative
Main Attributes			
Analog Mircrodrive; V/Hz ; Open Chassis or NEMA 4X enclosures, compact and low cost	Basic V/Hz Control, 300-800 Hp NEMA 1 enclosure	Closed loop vector, 300-800 Hp NEMA 1 enclosure, zero speed torque, auto motor tuning, digital speed and torque control	22H is a version of the 18H with a Regenerative front end
Hp Range			
1/2 to 5	300 to 800	300 to 800	10 to 50
Voltage Range			
115V/230V 1-Phase 230V/460V 3-Phase	460V 3-Phase	460V 3-Phase	230V/460V 3-Phase
Enclosure Selection			
Chassis or NEMA 4X/12	NEMA 1 (300-800 Hp)	NEMA 1 (300-800 Hp)	IP20
Control Mode			
V/Hz	V/Hz	Closed Loop Vector Only	Closed Loop Vector
Speed Range (Typ.)			
20:1	20:1	1000:1	1000:1 Closed Loop Vector
Communications Options			
None	Option Cards for RS232/RS485, DeviceNet, Profibus and Modbus	Option Cards for RS232/RS485, DeviceNet, Profibus and Modbus	Option Cards for RS232/RS485, DeviceNet, Profibus and Modbus
Operator Interface			
Analog Controls	Local or Remote (NEMA 4) Mounted 32 character alpha-numeric LCD display	Local or Remote (NEMA 4) Mounted 32 character alpha-numeric LCD display	Local or Remote (NEMA 4) Mounted 32 character alpha-numeric LCD display
Differentiating Feature			
Easy-to-Use Basic Startup Menu; Runs Right Out of the Box; Optional I/O Expansion Cards	Easy-to-Use Basic Startup Menu, Runs Right Out of the Box; Optional I/O Expansion Cards	Easy-to-Use Basic Startup Menu; Runs Right Out of the Box; Optional I/O Expansion and Speed Feedback Cards	Regenerative Applications
Matched Performance® Motors			
M & CP Standard-E®, EM & ECP Super-E®	NEMA 1 CSM and JMSM NEMA 4X CWDSM	VS-Master, RPM-AC, ZDM VectorDuty®, ZDNM VectorDuty, ZDWNM VectorDuty	VS-Master, RPM-AC, ZDM VectorDuty, ZDNM VectorDuty, ZDWNM VectorDuty

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Series 5
Micro Inverters

1/2 thru 2 Hp	**97-132 VAC**	**1 Phase - 50/60 Hz**
1/2 thru 2 Hp	**195-265 VAC**	**1 Phase - 50/60 Hz**
2 thru 3 Hp	**195-265 VAC**	**3 Phase - 50/60 Hz**
1 thru 5 Hp	**323-529 VAC**	**3 Phase - 50/60 Hz**

Applications: Variable torque, constant torque or constant horsepower applications. New installations, replacements and original equipment manufacturers (OEM).

Features: NEMA 4X or open chassis mount standard. Output frequency 0.25 to 120 Hz with peak overload capacity of 150%. Separate accel/decel rates and controlled reversing.

Design Specifications
- PWM output
- Accel/decel rate adjustment
- Controlled reversing
- Adjustable current limit
- I^2t motor overload protection
- Adjustable slip compensation
- Min/max output frequency adjustment
- Selectable auto/manual restart

Operator Interface-Enclosed Units
- Start/Stop command
- NEMA 4X enclosure
- Power on/off
- Rotary speed control
- Fwd/Rev optional
- Auto/Manual optional

Environmental and Operating Conditions
- Input voltage:
  1 phase 115 VAC ±15%,
  1 phase 230 VAC ±15%
  3 phase 230V ±15%
  3 phase 460 ± 15%
- Input frequency 50 or 60Hz ±10%
- Service factor - 1.0
- Duty - continuous
- Humidity - 90% max RH non-condensing
- Altitude - 3300 feet max without derate
- Chassis mount or NEMA 4X enclosure as standard

Protective Features
- Selectable automatic restart at momentary power loss
- Power indicator
- Status indicator
- Adjustable time base overload
- Electronic in rush current limiting

Output Ratings	Overload Capacity	150% for 120 seconds	
	Voltage - 3 Phase	0-230 VAC (RMS), 0-460 V AC (RMS)	
Control Spec	Control Method	Sinewave carrier input, PWM output	
	PWM Frequency	Rated 8.0 kHz	
	V/Hz Ratio	Factory set for optimum output	
	Torque Boost	Factory set for 60 Hz motors. Adjustable 6-30% for 50 Hz motors	Adjustable 0-30% max
	Current Limit	Adjustable 63 to 188% of rated output	0-200%
	Frequency Setting	0-5 VDC, 0-10 VDC with external resistor network, non-isolated input	
	Accel/Decel	Separate accel/decel rates, 0.3-20 sec for 60 Hz motors	0.3-20 Sec
		Combined accel/decel for 50 Hz motors	
Protective Functions	Inverter Trip	Over voltage, over current, under voltage, motor overload, output short circuit	
	Status Indicators	Tricolor LED indicator for status and green LED indicator for power on	
	Short Circuit	Output phase to phase	
Ambient Conditions	Temperature	0-45°C	0-50°C
	Cooling	Convection 1/2 - 2 Hp; Forced Air 3-5 Hp	Convection
	Enclosure	Open chassis	NEMA 4X (IP65)

Series 5 Micro Inverters continued...

Hp/kW	Input Voltage	Output Current		Catalog Number	List Price	Mult. Sym.	Ap'x. Shpg. Wgt.	Dimensions in/(mm)				
								Outside			Mounting	
		Cont.	120 Sec.					H	W	D	H	W
Open Chassis Mount – Single Phase Input												
0.5/0.37	115/230	2.4	3.6	**ID56F50-CO**	383	E9	4	4.3	3.9	2.75	3.8	2.5
1/0.75	115/230	4	6	**ID5601-CO**	464	E9	5	4.3	3.9	5	3.87	3.7
2/1.5	115/230	5.5	8.25	**ID5602-CO**	603	E9	6	4.67	5.58	5.7	3.87	2.5
Open Chassis Mount – Three Phase Input												
2/1.5	230	6.7	10.1	**ID5202-CO**	731	E9	5	8.55	4.68	4.5	6.5	3.9
3/2.25	230	8.8	13.2	**ID5203-CO**	770	E9	5	8.55	4.68	4.5	6.5	3.9
1/0.75	460	2.5	3.75	**ID5401-CO**	796	E9	5	8.55	4.68	4.5	6.5	3.9
2/1.5	460	4	6	**ID5402-CO**	817	E9	5	8.55	4.68	4.5	6.5	3.9
3/2.25	460	4.5	6.75	**ID5403-CO**	840	E9	5	8.55	4.68	4.5	6.5	3.9
5/3.7	460	7.6	11.4	**ID5405-CO**	1,072	E9	5	8.55	4.68	4.5	6.5	3.9
NEMA 1 Enclosed - Single Phase Input												
1/0.75	115/230	4	6	**ID5601-EO**	559	E9	6	7.13	6.25	2.75		
NEMA 4X Enclosed – Single Phase Input												
1/0.75	115/230	3.6	5.4	**ID5601-WO**	740	E9	6	9.53	5.51	5.86	8.85	–
1/0.75	115/230	3.6	5.4	**ID5601-BO**	694	E9	6	9.53	5.51	5.86	8.85	–
2/1.5	115/230	5.5/6.7	8.3/10.0	**ID5602-WO**	1,044	E9	6	9.8	7.55	7.25	9.25	1
2/1.5	115/230	5.5/6.7	8.3/10.0	**ID5602-BO**	985	E9	8	9.8	7.55	7.25	9.25	1
NEMA 4X Enclosed – Three Phase Input												
3/2.25	230	9	13.5	**ID5203-WO**	1,183	E9	6	9.8	7.55	7.25	9.25	1
3/2.25	230	9	13.5	**ID5203-BO**	1,125	E9	6	9.8	7.55	7.25	9.25	1
3/2.25 (1)	460	4.6	6.9	**ID5403-WO**	1,253	E9	6	9.8	7.55	7.25	9.25	1
3/2.25 (1)	460	4.6	6.9	**ID5403-BO**	1,194	E9	6	9.8	7.55	7.25	9.25	1
5/3.7	460	8.3	12.45	**ID5405-WO**	1,333	E9	6	9.8	7.55	7.25	9.25	1
5/3.7	460	8.3	12.45	**ID5405-BO**	1,276	E9	6	9.8	7.55	7.25	9.25	1

(1) Jumper configurable for 1 HP and 2 HP
NOTE: -WO is white in color -BO is black in color; -EO is NEMA 1.

Series 5 Options

Catalog Number	Description	List Price	Mult. Sym.	Ap'x. Shpg. Wgt.
ID5RGA-1	Dynamic braking kit for open chassis 115/230V 1/2 Hp and 1 Hp rated controls	236	E9	3
ID5SI-1	Signal isolator for open chassis units Provides isolation for up to 24 VDC and 4-20mA command signals and run relay output. Select relay as N.O. or N.C. contacts rated at 125 VAC @ 0.5A	206	E9	4
ID5SI-2	Signal isolator for NEMA 4X enclosed units Provides isolation for up to 24 VDC and 4-20mA command signals.	233	E9	1
ID5AMS-1	Auto/Manual selection switch for NEMA 4X enclosed units Allows selection of remote or on-board speed commands	57	E9	1
ID5FRS-1	Forward/Stop/Reverse selection switch for NEMA 4X enclosed units Allows selection of forward or reverse motor direction commands	32	E9	1
ID5FRS-2	Forward/Stop/Reverse selection switch for NEMA 1 enclosed units. Allows selection of forward or reverse motor direction commands.	32	E9	1

Series 15H Inverter

300 thru 450 Hp **460 VAC** **3 Phase - 50/60 Hz**

Applications: Constant torque, variable torque or constant horsepower applications. New installations, replacements and original equipment manufacturers (OEM).

Features: NEMA 1 enclosure as standard. Output frequency 0.25 to 400 Hz with peak overload capacity of 170-200%. Separate accel/decel rates and controlled reversing. Built in two and three input PID process control loop.

Design Specifications
- Process follower 0-5 VDC, 0-10 VDC, 4-20 mA
- Free run or ramp stop
- Selectable preset speeds
- Jog speed
- Dynamic braking (optional on size C2 and larger)
- DC injection braking
- 2 analog meter outputs
- 2 opto isolated outputs
- 2 relay outputs
- Through wall & panel mount size C2, E and F.

Operator Keypad
- Forward/Reverse command
- Motor RUN and JOG
- Local/Remote key
- Stop command
- Parameter setting and display
- 32 character display
- Remote mount to 100 feet (60m) from control
- NEMA 4X enclosure when mounted on panel

Environmental and Operating Conditions
- Input voltage
  3 phase 200-240 VAC ±10%
  3 phase 378-480 VAC ±10%
  3 phase 573-600 VAC ±10%
- Input frequency - 50 or 60Hz ±5%
- Service factor - 1.0
- Duty - continuous
- Humidity - 90% max RH non-condensing
- Altitude - 3300 feet (1000m) max without derate

Protective Features
- Selectable automatic restart at momentary power loss
- DC bus charge indicator
- Fault indicator
- Adjustable time based overload
- Cause of last 31 trips retained in memory
- Digital display for fault conditions
- Linear heat sink thermal sensor
- Isolated control circuitry

Output Ratings	Overload Capacity	150% for 60 seconds; 170-200% for 3 seconds for constant torque
		115% for 60 seconds for variable torque
	Frequency	0.25-400 Hz
	Voltage	0-Maximum input voltage (RMS)
Input Ratings	Frequency	50 or 60 Hz ± 5%
	Voltage	180 - 264 VAC; 340 - 528 VAC, 515 - 660 VAC
	Phase	Three phase (or single phase with derate)
	Impedance	1% minimum for size C2, F, G and G2 (3% minimum required for size A, B, D and E)
Control Spec	Control Method	Sinewave carrier input, PWM output
	PWM Frequency	Adjustable 1-5 kHz standard, 1-15 kHz quiet
	V/Hz Ratio	Linear to squared reduced, base frequency, output voltage, minimum frequency limit, maximum frequency limit
	Torque Boost	0-15% of input voltage; automatic with manual override
	Brake Torque	20% standard on -E and -W; and -EO requires external assembly
	Skip Frequency	Three zones 0-Max frequency
	Frequency Setting	0-5 VDC, 0-10 VDC, 4-20mA, digital via optional RS232/485
	Accel/Decel	Separate accel/decel rates, 0-3600 sec to maximum frequency
Protective Functions	Inverter Trip	Over voltage, over current, under voltage, external trip, heatsink thermal, motor overload
	Stall Prevention	Over voltage suppression, overcurrent suppression
	External Output	OPTO isolated outputs, relay outputs, and LED indicator for trip
	Short Circuit	Phase to phase, phase to ground
LCD Display	Running	Output frequency, set frequency, output current(%), voltage, RPM, custom units
	Setting	Parameter values for setup and review
	Trip	Separate message for each trip, cause of last 31 trips retained in memory
Ambient Conditions	Temperature	-10 to + 40˚C For UL Listing
	Cooling	Forced air included when required

OPTIONS: See pages 301-302 for optional Expansion Boards including RS-232, RS-485 isolated input etc.
See page 299 for optional Dynamic Braking Assemblies.

Series 15H Inverter Drive Output Ratings

Catalog Number	Size	Heavy Duty			Normal Duty			List Price	Mult. Sym.
		Hp	Continuous Amps	Peak Amps	Hp	Continuous Amps	Peak Amps		
460 Volts - Three Phase									
ID15H4300-E0	G2	300	370	630	350	420	490	57,720	E1
ID15H4350-E0	G2	350	420	720	400	480	560	67,835	E1
ID15H4400-E0	G2	400	480	820	450	540	620	75,461	E1
ID15H4450-E0	G	450	540	855	500	590	680	88,091	E1

OPTIONS: See pages 301-302 for optional Expansion Boards. See page 299 for optional Dynamic Braking Assemblies.
See notes on inside back flap.

Dimensions in/(mm)

Size	Outside			Mounting		Ap'x Shpg. Wgt.
	Height	Width	Depth	Height	Width	
G	93/(2362)	31.5/(800)	23.6/(600)	Floor Mount		700
G2	65.98/(1676)	31.6/(803)	23.49/(597)	Floor Mount		600

Series 18H Vector Drive

300 thru 450 Hp 460 VAC 3 Phase - 50/60 Hz

Applications: Constant torque or constant horsepower applications. New installations, replacements and original equipment manufacturers. (OEM).

Features: NEMA 1 enclosure as standard. Output frequency 0-500Hz with peak overload capability of 170-200%. Automatic tuning to motor and full rated torque down to zero speed. Digital speed or torque control. Built in two and three input PID process control loop.

Design Specifications
- Motor shaft orient to marker
- Process follow ±5VDC 0-5 VDC, ±10VDC 0-10 VDC ,4-20mA, digital via keypad or optional RS232/485
- Linear or S-curve deceleration
- 15 preset speeds
- 2 assignable analog outputs
- 2 assignable opto outputs
- 2 assignable relay outputs
- 2 assignable analog inputs
- Through wall and panel mount size C2, E and F

Operator Keypad
- Forward/Reverse command
- Motor RUN and JOG
- Local/Remote key
- Stop command
- 32 character display
- Remote mount to 100 feet (60m) from control
- NEMA 4X enclosure when mounted on panel

Environmental and Operating Conditions
- Input voltage
  3 phase 200-240 VAC ±10%
  3 phase 378-480 VAC ±10%
  3 phase 573-600 VAC ±10%
- Input frequency
  50 or 60Hz ±5%
- Service factor - 1.0
- Duty - continuous
- Humidity - 90% max RH non-condensing
- Altitude - 3300 feet (1000m) max without derate

Protective Features
- Adjustable current limit
- Isolated control circuitry
- Digital display for fault conditions
- Selectable automatic restart at momentary power loss
- DC bus charge indicator
- Cause of last 31 trips retained in memory

Output Ratings	Overload Capacity	150% for 60 seconds, 170-200% for 3 seconds for constant torque
		115% for 60 seconds for variable torque
	Frequency	0-500 Hz
	Voltage	0-maximum input voltage (RMS)
Input Ratings	Frequency	50 or 60 Hz ±5%
	Voltage	180 - 264 VAC; 340 - 528 VAC; 515 - 660 VAC
	Phase	Three phase (or single phase with derate)
	Impedance	1% minimum for size C2, F, G, and G2 (3% minimum required for Size A, B, D and E)
Control Spec	Control Method	Microprocessor controlled PWM output
	PWM Frequency	Adjustable 1-5kHz STD, 1-16 kHz quiet
	Speed Setting	±5 VDC, 0-5 VDC ±10 VDC, 0-10 VDC, 4-20 mA; digital via keypad, RS232/485
	Accel/Decel	0-3600 sec.
	Motor Matching	Automatic tuning to motor with manual override
Motor Feedback	Feedback Type	Incremental encoder coupled to motor shaft
	Pulses/Rev	60 -15,000 selectable, 1024 standard
	Voltage Output	2 channel in quadrature, 5 VDC, differential
	Marker Pulse	Required for position orientation
	Power Input	5 VDC, 300 mA maximum
	Max. Frequency	1 MHz
	Positioning	Buffered encoder pulse train output for position loop controller
Protective Functions	Vector Trip	Missing control power, over current, over voltage, under voltage, motor over speed
		Over temperature (motor or control), output shorted or grounded, motor overload
	External Output	LED indicator for trip conditions, 4 assignable logic outputs, 2 assignable analog outputs 0-5 VDC
	Short Circuit	Phase to phase, phase to ground
LCD Display	Running	Output frequency, motor RPM; output current, voltage (selectable)
	Setting	Parameter values for setup and review
	Trip	Separate message for each trip, last 31 trips retained in memory
Ambient Conditions	Temperature	-10 to 40°C for UL listing
	Cooling	Forced air included when required

OPTIONS: See pages 301-302 for optional Expansion Boards including RS-232, RS-485. See page 299 for enclosure Dimensions.
See page 300 for optional Dynamic Braking Assemblies.

Series 18H Vector Drive Output Ratings

Catalog Number	Size	Heavy Duty			Normal Duty			List Price	Mult. Sym.
		Hp	Continuous Amps	Peak Amps	Hp	Continuous Amps	Peak Amps		
460 Volts - Three Phase									
ZD18H4300-EO	G2	300	370	630	350	420	490	64,891	E1
ZD18H4350-EO	G2	350	420	720	400	480	560	75,461	E1
ZD18H4400-EO	G2	400	480	820	450	540	620	83,488	E1
ZD18H4450-EO	G	450	540	855	500	590	680	98,472	E1

NOTE: -MO suffix indicates a protected chassis enclosure (not NEMA 1). See notes on inside back flap.
OPTIONS: See pages 301-302 for optional Expansion Boards. See page 300 for optional Dynamic Braking Assemblies.

Dimensions in/(mm)

Size	Outside			Mounting		Ap'x Shpg.Wgt.
	Height	Width	Depth	Height	Width	
G	93/(2362)	31.5/(800)	23.6/(600)	Floor Mount		700
G2	65.98/(1676)	31.6/(803)	23.49/(597)	Floor Mount		600

Series 22H Line Regenerative Vector Drive

10 thru 50 Hp **230 VAC** **3 Phase - 50/60 Hz**
10 thru 50 Hp **460 VAC** **3 Phase - 50/60 Hz**

Applications: Variable torque, constant torque or constant horsepower applications. New installations, replacements and original equipment manufacturers. (OEM).

Features: NEMA 1 enclosure as standard. Output frequency 0-500Hz with peak overload capability of 170-200%. Automatic tuning to motor and full rated torque down to zero speed. Digital speed or torque control. Built in two and three input PID process control loop.

Design Specifications

- Process follower ±5VDC 0-5 VDC, ±10VDC 0-10 VDC , 4-20mA, digital via keypad or optional RS232/485
- Linear or S-curve deceleration
- Controlled reversing
- 15 preset speeds
- 2 assignable analog outputs
- 2 assignable logic outputs
- 2 assignable relay outputs
- 2 assignable analog inputs
- Motor shaft orient to marker

Operator Keypad

- Forward/Reverse command
- Motor RUN and JOG
- Local/Remote key
- Stop command
- 32 character display
- Remote mount to 100 feet (60m) from control
- NEMA 4X enclosure when mounted on panel

Environmental and Operating Conditions

- Input voltage
  Three phase 200-240 VAC ±10%
  Three phase 378-480 VAC ±10%
- Input frequency
  50 or 60Hz ±5%
- Service factor - 1.0
- Duty - continuous
- Humidity - 90% max RH non-condensing
- Altitude - 3300 feet (1000m) max without derate

Protective Features

- Adjustable current limit
- Isolated control circuitry
- Digital display for fault conditions
- Selectable automatic restart at momentary power loss
- DC bus charge indicator
- Cause of last 31 trips retained in memory

Output Ratings	Overload Capacity	150% for 60 seconds, 170-200% for 3 seconds for constant torque
		115% for 60 seconds for variable torque
	Frequency	0-500 Hz
	Voltage	0-Maximum input voltage (RMS)
Input Ratings	Frequency	50 or 60 Hz ±5%
	Voltage	180 - 264 VAC; 340 - 528 VAC
	Phase	Three phase
	Impedance	3.0% minimum required
Control Spec	Control Method	Microprocessor controlled PWM output
	PWM Frequency	Adjustable 1-5kHz STD, 1-16 kHz quiet
	Speed Setting	±5 VDC, 0-5 VDC ±10 VDC, 0-10 VDC, 4-20 mA; digital via keypad, RS232/485
	Accel/Decel	0-3600 sec
	Motor Matching	Automatic tuning to motor with manual override
Motor Feedback	Feedback Type	Incremental encoder coupled to motor shaft
	Pulses/Rev	60-15,000 selectable, 1024 standard
	Voltage Output	2 channel in quadrature, 5 VDC, differential
	Marker Pulse	Required for position orientation
	Power Input	5 VDC, 300 mA maximum
	Max. Frequency	1 MHz
	Positioning	Optional buffered encoder pulse train output for position loop controller
Protective Functions	Vector Trip	Missing control power, over current, over voltage, under voltage, motor over speed
		Over temperature (motor or control), output shorted or grounded, motor overload
	External Output	LED indicator for trip conditions, 4 assignable logic outputs, 2 assignable analog outputs 0-5 VDC
	Short Circuit	Phase to phase, phase to ground
LCD Display	Running	Output frequency, motor RPM; output current, voltage (selectable)
	Setting	Parameter values for setup and review
	Trip	Separate message for each trip, last 31 trips retained in memory
Ambient Conditions	Temperature	-10 to +40°C for UL listing
	Cooling	Forced air included when required

OPTIONS: See pages 301-302 for optional Expansion Boards including RS-232, RS-485.

Series 22H Line Regenerative Vector Drive Output Ratings

Catalog Number	Size	Heavy Duty			Normal Duty			List Price	Mult. Sym.
		Hp	Continuous	Peak	Hp	Continuous	Peak		
230 Volts - Three Phase									
ZD22H210-EL	C+	10	28	56	10	28	32	10,488	E1
ZD22H215-EL	C+	15	42	72	15	42	48	11,655	E1
ZD22H220-EL	C+	20	55	110	20	55	62	13,645	E1
ZD22H225-EL	C+	25	68	116	25	68	78	15,939	E1
ZD22H230-EL	D+	30	80	136	30	80	92	17,333	E1
ZD22H240-EL	D+	40	105	200	40	105	120	21,583	E1
ZD22H250-EL	D+	50	130	225	50	130	150	26,493	E1
460 Volts - Three Phase									
ZD22H410-EL	C+	10	15	30	10	15	17	10,920	E1
ZD22H415-EL	C+	15	21	36	15	21	24	11,877	E1
ZD22H420-EL	C+	20	27	50	20	27	31	13,831	E1
ZD22H425-EL	C+	25	34	58	25	34	39	15,585	E1
ZD22H430-EL	D+	30	40	70	30	40	46	17,593	E1
ZD22H440-EL	D+	40	55	100	40	55	63	21,701	E1
ZD22H450-EL	D+	50	65	115	50	65	75	26,186	E1

NOTE: See notes on inside back flap.
OPTIONS: See pages 301-302 for optional Expansion Boards.

Series 15H, 18H, and 22H Keypad Extension Cable

For the convenience of our customers, we offer a connector plug/cable assembly.
This assembly provides the connectors from the keypad to the control for remote keypad operation.

Catalog Number	Cable Extension Length	List Price	Mult. Sym.	Approx. Shpg. Wgt.
CBLH015KP	5 feet (1.5 meter)	84	E8	1
CBLH030KP	10 feet (3.0 meter)	119	E8	1
CBLH046KP	15 feet (4.6 meter)	152	E8	1
CBLH061KP	20 feet (6.1 meter)	254	E8	2
CBLH091KP	30 feet (9.1 meter)	389	E8	3
CBLH152KP	50 feet (15.2 meter)	509	E8	3
CBLH229KP	75 feet (22.9 meter)	559	E8	4
CBLH305KP	100 feet (30.5 meter)	693	E8	5

Dimensions in/(mm)

Size	Outside			Mounting		Ap'x Shpg. Wgt.
	Height	Width	Depth	Height	Width	
C+	30/(762)	11.5/(292)	12.2/(310)	29.25/(743)	10.5/(267)	160
D+	36/(914)	14.5/(368)	12.2/(310)	35.25/(895)	13.50/(343)	280

Series 15H and 18H Dynamic Braking Transistor Assemblies

Dynamic Braking Transistor Assemblies include braking transistor completely assembled and mounted into a NEMA 1 enclosure, to be used with External Dynamic Braking Resistor Assemblies (RGA). Select RGA assembly with matching minimum OHMS and continuous regenerative power (Watts) capacity to meet load requirements. For use with -EO and -MO Controls.

Hp	Maximum Braking Torque In % Of Motor Rating			
	380-480 Vac		550-600 Vac	
300	62%	125%	29%	100%
350	54%	108%	-	87%
400	47%	94%	-	76%
450	41%	84%	-	68%
Cat. No.	**RTA4-4**	**RTA4-2**	**RTA5-14**	**RTA5-4**
List Price	2,816	3,973	2,354	3,098
Mult. Sym.	E8	E8	E8	E8

Series 15H and 18H Dynamic Braking Resistor Assemblies

Dynamic Braking Resistor Assemblies include braking resistors completely assembled and mounted into a NEMA 1 enclosure. For 20 Hp and above (-EO, -MO Controls), select the braking resistor from the table with the matching ohms for the RTA selected and adequate continuous watts capacity to meet load requirements. For 1 to 15 Hp (-E,-ER Controls) select the braking resistor that has correct ohm value for the control and adequate continuous watts capacity to meet load requirements.

Input Voltage	Hp	Total Ohms	Continuous Rated Watts			
			4800	6400	9600	14200
460	300-450	2	**RGA4802**	**RGA6402**	**RGA9602**	**RGA14202**
		List Price	2,107	5,312	8,525	11,731
		Mult. Sym.	EC	EC	EC	EC

Series 15H, 18H, 19H, 20H and 22H Expansion and Accessory Boards

Baldor offers a wide variety of plug-in expansion boards for Series 15H Inverters, Series 18H or 22H Vector Drives and Series 19H or 20H DC Controls. Expansion boards allow the drive to be interfaced with various inputs and outputs. Each control has the capability to utilize up to two expansion boards. The following list shows boards available. The matrix shows which boards may be used together in the same control.

Board Number	Description	List Price	Mult. Sym.
ACB003A01	Isolated Input/2 Relay Output Accessory Board Contains 9 Isolated inputs for 90-130VAC. All inputs must be the same voltage. Also has 2 relay outputs, Form "C": N.O. and N. C. Accessory Board mounts in Expansion Board slot but uses wiring harness to connect to motor control card. Requires control board with onboard 24VDC power supply.	373	E8
EXB003A04	Isolated Input Board Contains 9 isolated inputs jumper configurable for 10-30 VAC or 10-30 VDC. All must be the same voltage - one side of all inputs is common. This board replaces the opto inputs on the main control board. Uses screw terminals for connection. (Use with Series 15H, 18H and 22H only)	295	E8
EXB003A05	Isolated Input Board Contains 9 isolated inputs jumper configurable for 90-130 VAC. All must be the same voltage - one side of all inputs is common. This board replaces the opto inputs on the main control board. Uses screw terminals for connection. (Use with Series 15H, 18H and 22H only).	295	E8
EXB004A01	Four Output Relays / 3-15 PSI Pneumatic Interface Converts 3-15 PSI air pressure to 0-10 VDC or 10-0 VDC (inverted). Also has four relays, 2 of which are jumper selectable as N.O. or N.C., rated for 230VAC, 5 amps max and two form "C". Uses screw terminals for connections. Air hose connects to 1/8" O.D. nipple on board.	542	E8
EXB005A01	Master Pulse Reference / Isolated Pulse Follower–Bi-directional jumper selectable for: 1. Master quadrature pulse reference. Provides 5 volt quadrature A and B channel outputs with complements at a pulse rate proportional to accel-decel limited speed commands. Phase of B channel is reversed for reverse direction. 2. Master speed step-direction pulse reference. Provides 5 volt pulse and direction outputs with complements at a pulse rate proportional to accel-decel limited speed command. 3. Quadrature pulse follower. Provides opto isolated inputs for 5-15 volt quadrature A and B channel input speed commands and retransmits this input as 5 volt channel A and B outputs with complements at a pulse rate proportional to accel-decel limited speed command. Motor direction reverses with input channel phase reversal. 4. Speed step and direction pulse follower. Provides opto isolated inputs for 5-15 volt input pulse and direction. Commands and retransmits these inputs as 5 volt pulse and direction outputs with complements at a pulse rate proportional to accel-decel limited speed command.	461	E8
EXB006A01	DC Tachometer Interface Allows for DC tach input voltage for motor or process feedback Jumper selectable for input voltage with software trim for 10% tolerance. 250 VDC total maximum input voltage or can be used for one analog input with 16 bits resolution for ±10V and 15 bits resolution for 0-10 VDC input. Uses screw terminals for connection.	567	E8

Series 15H, 18H, 19H, 20H and 22H
Expansion and Accessory Boards continued...

Board No.	Description	List Price	Mult. Sym.
EXB007A02	High Resolution Analog Board Allows one input with up to 16 bits resolution. DC inputs: ± 10V, 0-10V, ± 5V, 0-5V, with 300 microvolt resolution. Current inputs: 4-20 mA, with 0.6 microamps resolution. Input — Resolution ± 10 V — 16 bit 0 - 10 V — 15 bit ± 5 V — 15 bit 0 - 5 V — 14 bit 4 - 20 mA — 15 bit Both the 0-10 V and 4-20 mA inputs may be inverted to 10-0 V and 20-4 mA. Two outputs, each with ± 10 VDC, 0-10 VDC or 4-20 mA with inverting capability. This replaces the analog outputs on the main control board. Uses screw terminals for connection.	749	E8
EXB008A01	Isolated Encoder Feedback Board This board is recommended for use with motors that do not have an electrically isolated encoder (Baldor Vector drive motors have isolated encoders). Contains a 0-15 VDC (300mA) isolated power supply to allow use with 5, 12 and 15 VDC encoders by jumper selection. Isolates A, B and index channels with complements. The retransmitted encoder signals may be configured in two ways with a board level jumper as follows: 1. For 2 channel quadrature output (A and B with complements), set jumper to disable the marker channel (index pulse) as an input. 2. To use the marker channel (index pulse) as an input, jumper must be set to disable channel B (and compliment) output. Retransmitted signals will always be 5 VDC differential. Uses screw terminals for connection.	791	E8
EXB010A01	Two analog output/three relay output board. Provides two isolated analog outputs each with 0-5VDC, 0-10VDC, or 4-20mA capability. Also includes three relay outputs jumper selectable for N.O. or N.C. rated for 230VAC, 5 amps maximum. Uses screw terminals for connection.	461	E8
EXB012A01	RS232 and RS485 High Speed Serial Communications Allows Series 15H and 18H controls to be connected to RS232 half and full duplex and isolated RS485 half duplex,230.4K Baud maximum. Uses DB-9 connector for RS232 and screw terminals for RS485.	295	E8
EXB013A01	DeviceNet Expansion Board Allows Series 15H and 18H controls to be connected to DeviceNet Communications Bus. Uses plug in terminals for connection	774	E8
EXB014A01	Profibus DP Expansion Board Allows Series 15H and 18H controls to be connected to Profibus Communications Bus. Uses plug in terminals for connection	932	E8
EXB015A01	Modbus plus Expansion Board Allows Series 15H and 18H controls to be connected to Modbus Communications Bus. Uses plug in terminals for connection	1,114	E8

Notes on Mounting

Expansion Boards plug into a slot inside the control. When using one expansion board either a Group 1 or 2 board will connect by a connector on the side of the board. When two expansion boards are used one must be from Group 1 and one from Group 2.

Accessory Boards can mount into either a Group 1 or Group 2 slot. When using an Accessory Board only one other Expansion Board may be used.

Group 1 Boards

Isolated Input Board
EXB003A04
EXB003A05

Master Pulse Reference/
Isolated Pulse Follower
EXB005A01

DC Tachometer Interface
EXB006A01

Isolated Encoder Feedback
EXB008A01

Group 2 Boards

Four Output Relays /
3-15 PSI Pneumatic Interface
EXB004A01

High Resolution Analog Board
EXB007A02

Two analog output/three relay outputs
EXB010A01

RS232/RS485 High Speed Serial Communication
EXB012A01

DeviceNet Communication
EXB013A01

Profibus DP Communication
EXB014A01

Modbus Plus Communication
EXB015A01